

IUBMB Enzyme Nomenclature

EC 3.6.3.9

Accepted name: Na⁺/K⁺-exchanging ATPase

Reaction: $\text{ATP} + \text{H}_2\text{O} + \text{Na}^+_{\text{in}} + \text{K}^+_{\text{out}} = \text{ADP} + \text{phosphate} + \text{Na}^+_{\text{out}} + \text{K}^+_{\text{in}}$

Systematic name: ATP phosphohydrolase (Na⁺/K⁺-exchanging)

Other name: sodium pump; Na⁺,K⁺ pump; Na,K-pump; (Na⁺ + K⁺)-activated ATPase; (Na⁺ + K⁺)-ATPase; Na⁺,K⁺-ATPase; Na,K-activated ATPase

Comments: A P-type ATPase that undergoes covalent phosphorylation during the transport cycle. This is a plasma membrane enzyme, ubiquitous in animal cells, that catalyses the efflux of three Na⁺ and influx of two K⁺ per ATP hydrolysed. It is involved in generating the plasma membrane electrical potential.

Links to other databases: [BRENDA](#), [EXPASY](#), [KEGG](#), [ERGO](#), [PDB](#), CAS registry number:

References:

1. Skou, J.C. The influence of some cations on an adenosinetriphosphatase from peripheral nerve. *Biochim. Biophys. Acta* 23 (1957) 394-401.
2. Post, R.L., Sen, A.K. and Rosenthal, A.S. A phosphorylated intermediate in adenosine triphosphate-dependent sodium and potassium transport across kidney membrane. *J. Biol. Chem.* 240 (1965) 1437-1445.
3. Skou, J.C. The energy-coupled exchange of Na⁺ for K⁺ across the cell membrane. The Na⁺,K⁺ pump. *FEBS Lett.* 268 (1990) 314-324. [PMID: [2166689](#)]

[EC 3.6.3.9 created 1984 as EC 3.6.1.37, transferred 2000 to EC 3.6.3.9, modified 2001]

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